1. A method to compensate vignetting in digital cameras comprising a multiplication of each pixel output of the array sensor of the camera with a variable correction factor defined for each pixel, wherein said variable correction factor depends upon the distance between each pixel and the center of said sensor array.

2. The method of claim **1** wherein said correction factor is calculated for each pixel using a first product of a first constant factor, describing the geometry and quality of the lens/sensor system, multiplied with the square of the distance between the pixel and the center of the sensor array, and a second product of a second constant, describing the geometry of the lens/sensor system with the distance between the pixel and the center of the sensor array to the power of four.

3. The method of claim **2** wherein said calculation of the correction factor for each pixel output is using the equation:

$f_{corr} = 1 + f1 \times dist2 - f2 \times dist4$,

wherein f_{corr} is the correction factor to be multiplied with each pixel output of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, dist2 is the square of the distance between a pixel and the center of the sensor array, f2 is a constant describing the geometry of the lens/sensor system, and dist4 is the distance between said pixel and the center of the sensor array to the power of four.

4. The method of claim **3** wherein x, y coordinates are being used to define the position of each pixel and said calculation of the correction factor for each pixel output is using the equation:

$f_{corr}(x, y) = 1 + f1 \times dist2(x, y) - f2 \times dist4(x, y),$

wherein f_{corr} is the correction factor to be multiplied with each pixel output of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, dist2(x, y) is the square of the distance between a pixel, having the coordinates x, y, and the center of the sensor array, f2 is a constant describing the geometry of the lens/sensor system, and dist4 is the distance between said pixel, having the coordinates x, y and the center of the sensor array to the power of four

5. The method of claim **3** wherein polar coordinates are being used, having the center of the sensor array as origin, to define the position of each pixel and said calculation of the correction factor for each pixel output is using the equation:

$f_{corr}(r) = 1 + f1 \times r2 - f2 \times r4,$

wherein f_{corr} is the correction factor to be multiplied with each pixel output of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, *r2* is the first polar coordinate ***r*** of a pixel to the power of 2, f2 is a constant describing the geometry of the lens/sensor system, and *r4* is the first polar coordinate ***r*** of a pixel to the power of four.

6. The method of claim **3** wherein said constant factors f1 and f2 depend upon the size of the lens, the size of the active sensor area, the distance between lens and sensor, the focal length, the thickness of the lens (depending on the material), and the quality of the lens.

7. A method to compensate vignetting in digital cameras comprising a multiplication of each pixel output of the array sensor of the camera, except pixels being close to the center, with a variable correction factor defined for said pixels, wherein said variable correction factor depends upon the distance between said pixels and the center of said sensor array.

8. The method of claim **7** wherein said correction factor is calculated for each pixel, except pixels being close to the center of the sensor array, using a first product of a first constant factor, describing the geometry and quality of the lens/sensor system, multiplied with the square of the distance between the pixel and the center of the sensor array, and a second product of a second constant, describing the geometry of the lens/sensor system with the distance between the pixel and the center of the sensor array to the power of four.

9. The method of claim **8** wherein said calculation of the correction factor for each pixel output, except for pixels being close to the center of the sensor array, is using the equation:

$$f_{corr} = 1 + f1 \times dist2 - f2 \times dist4,$$

wherein f_{corr} is the correction factor to be multiplied with each pixel output of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, dist2 is the square of the distance between a pixel and the center of the sensor array, f2 is a constant describing the geometry of the lens/sensor system, and dist4 is the distance between said pixel and the center of the sensor array to the power of four.

10. The method of claim **9** wherein x, y coordinates are being used to define the position of each pixel and said calculation of the correction factor for each pixel output, except for pixels being close to the center of the sensor array, is using the equation:

$f_{corr}(x,y) = 1 + f1 \times dist2(x,y) - f2 \times dist4(x,y)$,

wherein f_{corr} is the correction factor to be multiplied with each pixel output, except pixels being close to the center of the sensor array, of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, dist2(x, y) is the square of the distance between a pixel, having the coordinates x, y, and the center of the sensor array, f2 is a constant describing the geometry of the lens/sensor system, and dist4 is the distance between said pixel, having the coordinates x, y and the center of the sensor array to the power of four

11. The method of claim **9** wherein polar coordinates are being used, having the center of the sensor array as origin, to define the position of each pixel and said calculation of the correction factor for each pixel output, except for pixels being close to the center of the sensor array, is using the equation:

$f_{corr}(r) = 1 + f1 \times r2 - f2 \times r4$,

wherein f_{corr} is the correction factor to be multiplied with each pixel output, except pixels being close to the center of the sensor array, of the sensor array, f1 is a constant describing the geometry of the lens/sensor system, *r2* is the first polar coordinate ***r*** of a pixel to the power of 2, f2 is a constant describing the geometry of the lens/sensor system, and *r4* is the first polar coordinate ***r*** of a pixel to the power of four.

12. The method of claim **9** wherein said constant factors f1 and f2 depend upon the size of the lens, the size of the active sensor area, the distance between lens and sensor, the focal length, the thickness of the lens (depending on the material), and the quality of the lens.

13. A method to compensate vignetting in digital cameras using a correction factor for pixel output of its sensor array wherein the required computation comprises the following steps:

providing x, y coordinates for the pixels of the sensor array;

assign a first constant factor, describing the geometry of the lens/sensor system to a first variable f1;

assign a second constant factor, describing the geometry of the lens/sensor system to a second variable f2;

calculate the distance in x-direction between the location of a pixel and the center of the sensor array and assign it to a variable xdist;

calculate the distance in y-direction between the location of a pixel and the center of the sensor array and assign it to a variable ydist;

calculate the square of the total distance between the location of a pixel and the center of the sensor array and assign it to a variable dist2;

calculate the total distance between the location of a pixel and the center of the sensor array to the power of four and assign it to a variable dist4;

calculate a correction factor and assign to the variable fcorr according

to the equation

$$fcorr = 1 + f1 \times dist2 - f2 \times dist4;$$ and

multiply said correction factor with the old pixel value to get a compensated pixel value.

14. The method of claim **13** wherein all computations with the exception of the multiplication with the correction factor are performed using in integer mode.

15. The method of claim **13** wherein said correction factor is applied to all pixels of the sensor array.

16. The method of claim **13** wherein said correction factor is applied to all pixels of the sensor array, except pixels being close to the center of the sensor array.

17. A method to compensate vignetting in digital cameras using a correction factor for pixel output of its sensor array wherein the required computation comprises the following steps:

providing polar coordinates r and θ for the pixels of the sensor array, wherein the center of the sensor array is the origin of said polar coordinates;

assign a first constant factor, describing the geometry of the lens/sensor system to a first variable f1;

assign a second constant factor, describing the geometry of the lens/sensor system to a second variable f2;

calculate the square of the coordinate r of a pixel and assign it to a variable dist2;

calculate the coordinate *r* of a pixel to the fourth power and assign it to a variable dist4;

calculate a correction factor and assign to the variable fcorr according to the equation

fcorr = 1 + f1 x dist2 – f2 x dist4; and

multiply said correction factor with the old pixel value to get a compensated pixel value.

18. The method of claim **17** wherein all computations with the exception of the multiplication with the correction factor are performed using in integer mode.

19. The method of claim **17** wherein said correction factor is applied to all pixels of the sensor array.

20. The method of claim **17** wherein said correction factor is applied to all pixels of the sensor array, except pixels being close to the center of the sensor array.